

CXCR4: A new drug target in lung cancer

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Lung cancer patients whose tumors over-express a cell surface molecule called CXCR4 do significantly worse than those who do not, Canadian researchers have found. Their work, reported at the 2nd European Lung Cancer Conference in Geneva, highlights the exciting possibility that the molecule could soon become a new target for personalized cancer therapy.

CXCR4 is a receptor that is found on the surface of many different cell types in the body. It plays a role in immune system signaling between cells.

In cancer, evidence that CXCR4 is involved in the growth of tumors and their spreading throughout the body (metastasis) has been growing in recent years. For example, researchers have shown in studies in mice that blocking the action of CXCR4 inhibits metastasis. But its precise role in determining outcome and metastatic tendency, especially in lung cancer, is incompletely investigated.

Dr Gwyn Bebb and colleagues from the Tom Baker Cancer Centre in Calgary, Canada set out to explore whether patients whose tumors expressed high levels of the receptor had a worse prognosis than other lung cancer patients.

They studied tumor samples from 103 patients from the Glans-Look lung cancer database who were diagnosed with stage IV non-small-cell lung cancer (cancer which had already spread to other parts of the body) between 2003 and 2006. They found that 10.7% of the tumors over-

expressed CXCR4. Those over-expressers had a significantly worse clinical outcome, with a median overall survival of 2.7 months, compared to 6.1 months among low-expressers.

If confirmed in an expanded series of 170 patients from the Glans-Look database, these results will suggest that new strategies to block CXCR4 should be tested in patients whose cancers over-express the molecule, the researchers say.

"I am quite excited about the possibility of using CXCR4 as a therapeutic target, but we need to learn more about its role in each specific malignancy," Dr Bebb said.

This possibility is especially promising because CXCR4 has been well studied in the context of HIV, where it is known to be a portal for the virus's entry into immune system cells. Drugs that block CXCR4 have already been developed for HIV/AIDS patients, and Dr Bebb's group thinks these drugs could quickly and easily be tested in the cancer setting.

"This is an exciting possibility," Dr Bebb said. "It seems very likely that a better understanding of the role of CXCR4 in lung cancer will lead to new treatment strategies and might allow us to meaningfully improve treatment for some [lung cancer](#) patients in the very near future."

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